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09/889,473	07/17/2001	Ryuichi Murai	NAKI-BP44	4113

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Joseph W Price
Price Gess & Ubell
2100 SE Main Street Suite 250
Irvine, CA 92614

EXAMINER

QUARTERMAN, KEVIN J

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 09/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/889,473

Applicant(s)

MURAI ET AL.

Examiner

Kevin Quarterman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
2. The following title is suggested: --GAS DISCHARGE PANEL WITH ELECTRODES COMPRISING PROTRUSIONS, GAS DISCHARGE DEVICE, AND RELATED METHODS OF MANUFACTURE--.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claim 35 is rejected under 35 U.S.C. 101 because the claim embraces or overlaps two different statutory classes of invention. Claim 35 cites an apparatus—i.e. a gas discharge panel—where claim 34, upon which claim 35 depends, cites a method of manufacturing a gas discharge panel (See MPEP § 2173.05(p)).

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 35 and 43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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7. Regarding claim 35, the preamble of the claim begins with "The gas discharge panel of claim 34, wherein..." where claim 34 is a method of manufacturing a gas discharge panel.

8. Regarding claim 43, the claim states, "the outer protrusions form a *whole* through the bus line with the inner protrusions." It is unclear to the Examiner whether the term "whole" should be replaced by the term "hole" or whether the outer protrusions form some kind of a *whole* structure through the bus line with the inner protrusions. The Examiner notes that the term will be interpreted as a whole structure in this office action. Appropriate correction is required.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1-3, 6-8, 10-11, 14, 17-18, 20-22, 25-41, and 43 are rejected under 35 U.S.C. 102(e) as being anticipated by Kurogi (US 6495957).

11. Regarding independent claim 1, Figures 1-12 of Kurogi show a gas discharge panel (1) having a plurality of cells (C) arranged in a matrix, each cell being filled with a discharge gas (col. 5, ln. 43) which is enclosed between a facing pair of substrates (10, 20) and a plurality of barrier ribs (29) interposed between the pair of substrates, and

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plural pairs of display electrodes (X, Y) arranged on an inner surface of one of the substrates so as to extend in a row direction of the matrix, each pair of display electrodes comprising two bus lines (42) being parallel to each other and extending in the row direction of the matrix; one or more inner protrusions (412) being arranged within each cell on an inner side of one or both of the bus lines so as to protrude toward an inner side of an opposite bus line; and one or more outer protrusions (412) being arranged so as to protrude from an outer side of one or both of the bus lines, at least a section of each of the inner and outer protrusions being positioned between two adjacent barrier ribs.

12. Regarding claims 2, 11, and 22, Figures 1-12 of Kurogi shows a relation $Pe = A \times Ps/n$ being satisfied in relation to the two bus lines, Pe being a pitch of either the inner or outer protrusions, Ps being a pitch of the cells along the row direction of the matrix, A being a positive value less than 1, and n being a natural number.

13. Regarding claims 3 and 31-32, Kurogi discloses that the bus lines are composed of a metal and the inner and outer protrusions are composed of a transparent electrode material (col. 5, ln. 5-7).

14. Regarding claim 6, Figure 9 of Kurogi shows a width of an end section of each of the inner protrusions along the row direction of the matrix being narrower than a base section thereof.

15. Regarding claims 7, 18, and 27, Figure 3 of Kurogi shows a shortest discharge gap (w_1) between the plural pairs of display electrodes corresponding to a minimum discharge firing voltage or a voltage in the vicinity thereof as shown on a Paschen curve

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plotting a relationship between a Pd product and a discharge firing voltage, P being a pressure of the discharge gas and d being a discharge gap.

16. Regarding claims 8, 19, and 35, Figure 2 shows the inner surface of the substrate of the gas discharge panel arranged with the plural pairs of display electrodes being covered with an insulating layer (18) being composed of magnesium oxide (col. 5, ln. 28).

17. Regarding claim 10, Figure 7 of Kurogi shows the inner protrusions being provided on each of the two bus lines and the ends of the inner protrusions arranged on each of the bus lines being out of alignment along the row direction of the matrix.

18. Regarding claims 14 and 25, Figure 3 of Kurogi shows a plurality of barrier ribs formed between the pair of substrates along a column direction of the matrix, at least a section of the inner protrusions overlapping with the barrier ribs.

19. Regarding claims 17 and 26, Figure 7 of Kurogi shows a shape of the inner protrusions arranged on each of the bus lines being different.

20. Regarding independent claim 21, Kurogi discloses like limitations of independent claim 1, as discussed earlier. Figure 8 of Kurogi also shows each pair of display electrodes comprising two bases (411c) being parallel to each other and extending in the row direction of the matrix and one or more protrusions (415, 416) being arranged within each cell on an inner side of each of the bases so as to protrude toward an inner side of an opposite base, the ends of the inner protrusions arranged on each of the bases being out of alignment along the row direction of the matrix.

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21. Regarding independent claim 28, Kurogi discloses like limitations of independent claims 1 and 21, as discussed earlier. Figure 8 of Kurogi also shows each pair of display electrodes comprising two bases being extended in a row direction of the matrix and snaking along the plural pairs of display electrodes.

22. Regarding claim 29, Figure 8 of Kurogi shows a wavelength of each of the bases being out of alignment by half a wavelength.

23. Regarding claim 30, Figure 8 of Kurogi shows the plural pairs of display electrodes being arranged so that a bus line part (42c) composed of a metal and extending in a row direction of the matrix is connected electrically to each of the bases (411c).

24. Regarding independent claim 33, Kurogi discloses like limitations of independent claims 1, 21, and 28, as discussed earlier. Figure 8 of Kurogi also shows each pair of display electrodes comprising two bus lines (42c) being extended in a row direction of the matrix and two bases (41c) being connected electrically to and snaking along the bus lines, at least a section of the bases being arranged so as to be separate between two adjacent barrier ribs.

25. Regarding independent claims 34 and 36-37, Figures 1-12 of Kurogi show a method of manufacturing a gas discharge panel including a display electrode arranging step for arranging plural pairs of display electrodes (X, Y) on a main surface of a first substrate (10) so as to extend in a row direction, an insulating layer covering step for covering the first substrate with an insulating layer (18), and a cell forming step for forming a plurality of cells (C) in a matrix by arranging the main surface of the first

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substrate to face a main surface of a second substrate (20) with a plurality of barrier ribs (29) extending in a column direction interposed therebetween, each cell being an area in which a pair of display electrodes extend across two adjacent barrier ribs, wherein the display electrode arranging step has a substep for arranging two bus lines (42), which are parallel to each other and extend in a same direction, and for providing inner protrusions (412), which are arranged within each cell on an inner side of one or both of the bus lines, and the insulating layer covering step has a substep for forming an insulating layer of magnesium oxide.

26. Regarding independent claim 38, Kurogi discloses like limitations of independent claims 1, 21, 28, and 33, as discussed earlier. Figure 8 of Kurogi also shows each pair of electrodes being extended in a same direction; one or more inner protrusions (416) being arranged on an inner side of one or both of the electrode bases so as to protrude toward an inner side of an opposite electrode base; and one or more outer protrusions (415) being arranged so as to protrude from an outer side of one or both of the electrode bases.

27. Regarding claim 39, Figure 8 of Kurogi shows each pair of electrodes having two electrode bases that extend in a same direction and snake along the one or more pairs of electrodes.

28. Regarding claim 40, Figure 8 of Kurogi shows the ends of the inner protrusions arranged on each of the electrode bases being out of alignment.

29. Regarding claim 41, Figure 8 of Kurogi shows a wavelength of each of the electrode bases being out of alignment.

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30. Regarding claim 43, Figure 7 of Kurogi shows the outer protrusions forming a whole through the bus line with the inner protrusions.

Claim Rejections - 35 USC § 103

31. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

32. Claims 4-5, 12-13, 15-16, 23-24, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurogi.

33. Regarding claims 4-5 and 15-16, Kurogi teaches the claimed limitations discussed earlier but fails to exemplify a surface area of each of the outer protrusions being greater than a surface area of each of the inner protrusions.

34. However, Kurogi discloses that the protrusions may be asymmetric about a point positioned centrally in the direction of the row on the base (col. 3-4), which would give the outer protrusions a greater surface area than the inner protrusions.

35. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the electrodes of Kurogi with outer protrusions having greater surface areas than those of the inner protrusions, since a change in size is generally recognized as being within the level of ordinary skill in the art.

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36. Regarding claims 12-13 and 23-24, Kurogi teaches the claimed limitations discussed earlier but fails to exemplify a width in the row direction of the matrix of a section of the squared ends that face each other being 10 μ m or less.

37. However, Kurogi discloses that the facing ends of the electrodes are ensured to have a sufficient length in the row direction for suppressing increase of the firing voltage (col. 9, ln. 24-27).

38. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the display electrodes of Kurogi with a width in the row direction of the matrix of a section of the squared ends that face each other being 10 μ m or less, since where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

39. Regarding claim 42, Kurogi teaches the claimed limitations of claim 10, as discussed above, but fails to exemplify the bus lines being composed of silver.

40. However, Kurogi discloses that the bus lines may be formed of a light-tight substance comprising a metal film (col. 10, ln. 21-22).

41. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide bus lines composed of silver in the structure of Kurogi, since it is within the general skill of a worker in the art to select a known material on the bases of its suitability for conducting electricity.

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42. Claims 9 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurogi in view of Shirozu (US 6541922).

43. Regarding both claims 9 and 20, Kurogi teaches the claimed limitations of claims 8 and 19, as discussed earlier, but fails to exemplify an area of the insulating layer being composed of aluminum oxide.

44. Shirozu teaches that it is known in the art to provide gas discharge panels with an insulating layer being composed of magnesium oxide and aluminum oxide for providing protection to components of the device (col. 8).

45. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the gas discharge panel of Kurogi with an insulating layer composed of magnesium oxide and aluminum oxide, as taught by Shirozu, for providing protection in the device.

Conclusion

46. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Takagi (US 6376986) discloses a plasma display panel with varying partition distances. Park (US 6384531) discloses a plasma display device with conductive metal electrodes and auxiliary electrodes. Amemiya (US 6583560) discloses a plasma display panel.

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Contact Information

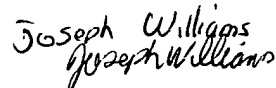
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quarterman whose telephone number is (703) 308-6546. The examiner can normally be reached on M-F (8-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (703) 305-4794. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Kevin Quarterman
Examiner
Art Unit 2879

kq 
August 13, 2003


for

Nimesh Patel
Supervisory Patent Examiner
Art Unit 2879